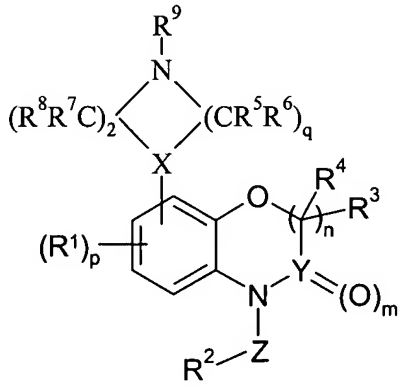
Claim Listing

1. (Previously Presented) A compound of the formula:



or a pharmaceutically acceptable salt or prodrug thereof,

wherein:

Y is C;

m is 1;

n is 1;

p is from 0 to 3;

q is from 1 to 3;

Z is $-(CR^aR^b)_r-$ or $-SO_2-$, where each of R^a and R^b is independently hydrogen or alkyl;

r is from 0 to 2;

X is CH or N;

each R^1 is independently halo, alkyl, haloalkyl, heteroalkyl, alkoxy, cyano, $-S(O)_s-R^c$, $-C(=O)-NR^cR^d$, $-SO_2-NR^cR^d$, $-N(R^c)-C(=O)-R^d$, or $-C(=O)\ R^c$, where each of R^c and R^d is independently hydrogen or alkyl;

s is from 0 to 2;

R^2 is aryl or heteroaryl;

each of R^3 and R^4 is independently hydrogen, alkyl, hydroxyalkyl or alkoxyalkyl, or R^3 and R^4 together with their shared carbon may form a carbocyclic ring of 3 to 6 members; and

each of R^5, R^6, R^7, R^8 and R^9 is independently hydrogen or alkyl, or one of R^5 and R^6 together with one of R^7, R^8 and R^9 and the atoms therebetween may form a ring of 5 to 7 members.

2. (Original) The compound of claim 1, wherein Z is $-(CR^aR^b)_r-$.

3. (Original) The compound of claim 2, wherein X is N and q is 2.

4. (Canceled)

5. (Previously Presented) The compound of claim 3, wherein r is 1.

6. (Original) The compound of claim 5, wherein R^a and R^b are hydrogen.

7. (Original) The compound of claim 6, wherein R^2 is optionally substituted phenyl or optionally substituted naphthyl.

8. (Original) The compound of claim 7, wherein R^2 is 2-halophenyl, 3-halophenyl, 4-halophenyl, naphthylen-2-yl, 3-cyanophenyl, 4-cyanophenyl, 3-nitrophenyl, 3-aminophenyl, 3-methoxyphenyl, 3-ureaphenyl, or 3-methylsulfonylamino-phenyl.

9. (Original) The compound of claim 7, wherein p is 1 and R^1 is halo, methyl or methoxy.

10. (Original) The compound of claim 7, wherein R^3 and R^4 are hydrogen.

11. (Original) The compound of claim 7, wherein R^3 and R^4 are methyl.

12. (Original) The compound of claim 7, wherein one of R^3 and R^4 is hydrogen and the other is methyl.

13. (Currently Amended) The compound of claim 7, wherein R^3 and R^4 together with the carbon atom therebetween form a cyclobutyl.

14. (Previously Presented) The compound of claim 8, wherein said compound is selected from:

4-benzyl-6-methyl-8-piperazin-1-yl-***H***-benzo[1,4]oxazin-3-one;

4-benzyl-6-methoxy-8-piperazin-1-yl-***H***-benzo[1,4]oxazin-3-one;

4-(2-fluoro-benzyl)-6-methoxy-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-(2-chloro-benzyl)-6-methoxy-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-(3-chloro-benzyl)-6-methoxy-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-benzyl-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-benzyl-6-fluoro-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-(2-fluoro-benzyl)-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-(4-fluoro-benzyl)-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-(4-chloro-benzyl)-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-(4-fluoro-benzyl)-6-fluoro-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-(2-fluoro-benzyl)-6-fluoro-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-(2-chloro-benzyl)-6-fluoro-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-(4-chloro-benzyl)-6-fluoro-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

6-fluoro-4-naphthalen-2-ylmethyl-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-(3-chloro-benzyl)-6-fluoro-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

3-(3-oxo-8-piperazin-1-yl-2,3-dihydro-benzo[1,4]oxazin-4-ylmethyl)-benzonitrile;

4-(3-fluoro-benzyl)-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

4-benzyl-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

(R)-4-benzyl-2-methyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

4-benzyl-6-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

4-(4-Fluoro-benzyl)-6-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

(S)-4-Benzyl-2-methyl-8-piperazin-1-yl-4***H***-benzo[1,4]oxazin-3-one;

8-Piperazin-1-yl-4-pyridin-4-ylmethyl-4***H***-benzo[1,4]oxazin-3-one;

4-Benzyl-6-methyl-8-(4-methyl-piperazin-1-yl)-4***H***-benzo[1,4]oxazin-3-one;

4-Benzyl-8-(4-methyl-piperazin-1-yl)-4*H*-benzo[1,4]oxazin-3-one;

4-(1-Phenyl-ethyl)-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

4-(3-Methoxy-benzyl)-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

4-(3-Nitro-benzyl)-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

4-(3-Amino-benzyl)-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

3-(3-Oxo-8-piperazin-1-yl-2,3-dihydro-benzo[1,4]oxazin-4-ylmethyl)-benzonitrile;

N-[3-(3-Oxo-8-piperazin-1-yl-2,3-dihydro-benzo[1,4]oxazin-4-ylmethyl)-phenyl]-methanesulfonamide;

4-(4-Fluoro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

4-(3-Fluoro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

[3-(3-Oxo-8-piperazin-1-yl-2,3-dihydro-benzo[1,4]oxazin-4-ylmethyl)-phenyl]-urea;

4-(3-Chloro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

4-Benzyl-8-(3,5-dimethyl-piperazin-1-yl)-4*H*-benzo[1,4]oxazin-3-one;

4-(4-Chloro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

4-Benzyl-6-fluoro-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

4-(4-Chloro-benzyl)-6-fluoro-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

6-Fluoro-4-(3-fluoro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

6-Fluoro-4-(2-fluoro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

6-Fluoro-4-(4-fluoro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one

4-(3-Chloro-benzyl)-6-fluoro-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;

4-Benzyl-8-(3,3-dimethyl-piperazin-1-yl)-4*H*-benzo[1,4]oxazin-3-one;

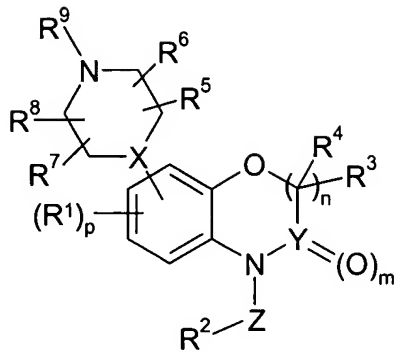
4-Benzyl-2,2-spiro-cyclobutan-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one.

15. (Original) The compound of claim 6, wherein R^2 is heteroaryl.

16. (Original) The compound of claim 15, wherein R^2 is pyridine-4-yl.

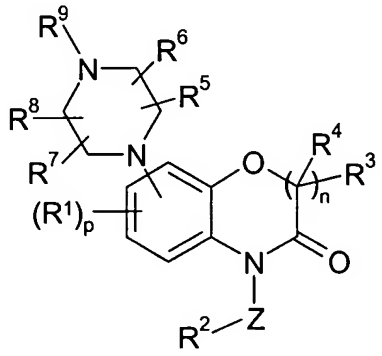
17-32. (Canceled).

33. (Original) The compound of claim 1, wherein said compound is of the formula:



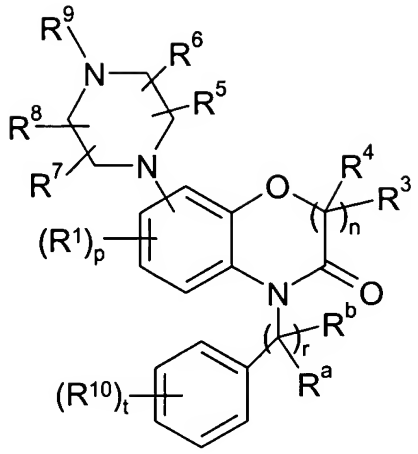
or a pharmaceutically acceptable salt or prodrug thereof, wherein X, Y, Z, R^1, R^2, R^3, R^4, R^5, R^6 , R^7, R^8, R^9, m, n, and p are as defined in claim 1.

34. (Original) The compound of claim 1, wherein said compound is of the formula:



or a pharmaceutically acceptable salt or prodrug thereof, wherein Z, R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, n, and p are as defined in claim 1.

35. (Previously Presented) The compound of claim 1, wherein said compound is of the formula:

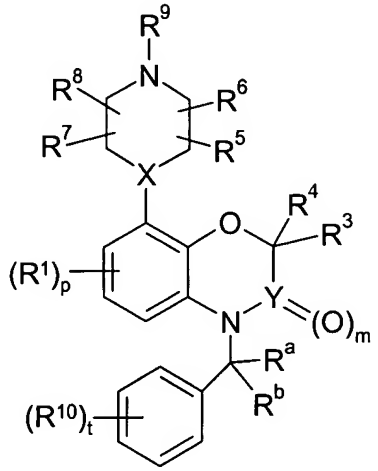


or a pharmaceutically acceptable salt or prodrug thereof, wherein R^1, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^a, R^b, n, p and r are as defined in claim 1, and wherein:

t is from 0 to 4; and

each R^{10} independently is halo, alkyl, alkoxy or cyano.

36. (Previously Presented) The compound of claim 1, wherein said compound is of the formula:



wherein X, Y, R^1, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^a, R^b, m, p and t are as recited in claim 1, and wherein:

t is from 0 to 4; and

each R^{10} independently is halo, alkyl, alkoxy or cyano.

37. (Original) The compound of claim 36, wherein R^1 is halo, methyl or methoxy.

38. (Original) The compound of claim 36 wherein R^3 and R^4 each independently is hydrogen or methyl.

39. (Original) The compound of claim 36, wherein R^3 and R^4 together with their shared carbon form a cyclobutyl group.

40. (Original) The compound of claim 36, wherein R^6, R^7, R^8, R^9 each independently is hydrogen or methyl.

41. (Original) The compound of claim 36, wherein R^a and R^b each independently is hydrogen or methyl.

42. (Original) The compound of claim 36, wherein each R^{10} is hydrogen, halo, nitro, cyano, amino, urea, methoxy or methanesulfonylamino.

43. (Original) A pharmaceutical composition comprising an efficacious amount of the compound of claim 1 in admixture with a pharmaceutically acceptable carrier.

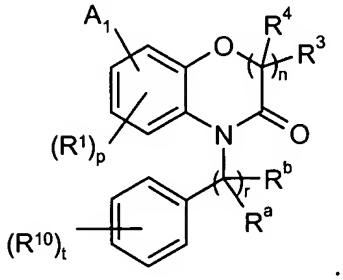
44. (Currently Amended) A method for treating ~~a central nervous system disease state~~ **memory disorders or Alzheimer's disease** in a subject, said method comprising administering to said subject a therapeutically effective amount of a compound of claim 1.

45. (Canceled)

46. (Canceled)

47. (Previously Presented) A method for producing a substituted benzoxazinone compound, said method comprising:

(a) contacting an N-arylalkyl benzoxazinone of the formula:



;

wherein:

A_1 is a leaving group,

n is 1;

p is from 0 to 3;

r is from 0 to 2;

t is from 0 to 4;

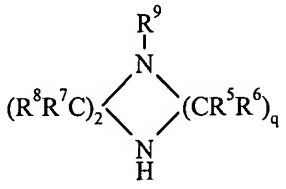
each of R^a and R^b is independently hydrogen or alkyl;

each R^1 is independently halo, alkyl, haloalkyl, heteroalkyl, alkoxy, cyano, $-S(O)_s-R^c$, $-C(=O)-NR^cR^d$, $-SO_2-NR^cR^d$, $-N(R^c)-C(=O)-R^d$, or $-C(=O)R^c$, where each of R^c and R^d is independently hydrogen or alkyl and s is from 0 to 2;

each of R^3 and R^4 is independently hydrogen or alkyl; and

each R^{10} is independently halo, alkyl, alkoxy or cyano;

with a heterocyclic compound of the formula:



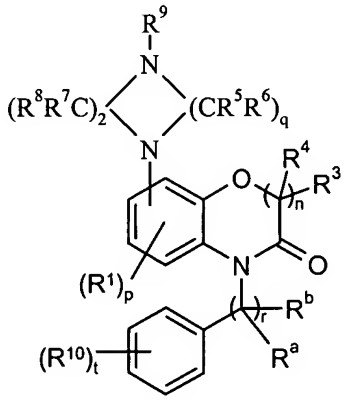
;

wherein:

q is from 1 to 3; and

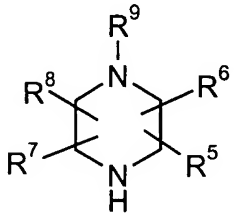
each of R^5, R^6, R^7, R^8 and R^9 is independently hydrogen or alkyl, or one of R^5 and R^6 together with one of R^7, R^8 and R^9 may form a ring of 5 to 7 members;

in the presence of a palladium catalyst to produce the heterocyclyl-substituted N-arylalkyl benzoxaninone compound of the formula:



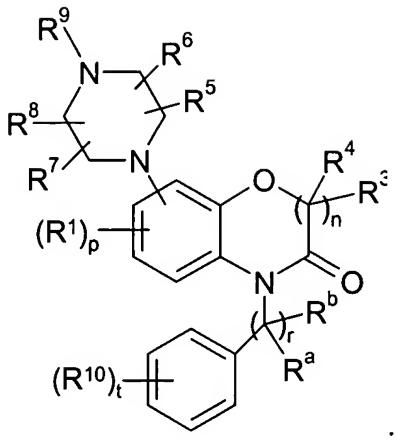
48. (Original) The method of claim 47, wherein the leaving groups A^1 is halo.

49. (Previously Presented) The method of claim 47, wherein the heterocyclic compound is of the formula:



;

such that the heterocyclyl-substituted N-arylalkyl benzoxaninone compound is of the formula:

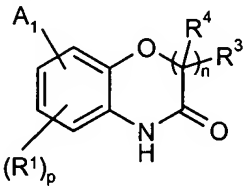


;

and R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, n, p, r and t are as described in claim 47.

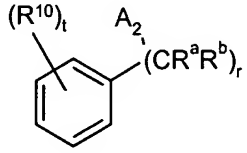
50. (Original) The method of claim 47, further comprising:

(a) contacting a benzoxazinone of the formula:



wherein n, p, A_1, R^1, R^3 andR^4 are as described in claim 1,

with an alkylating agent of the formula:



wherein:

A_2 is a leaving group and may the same or different from A_1; and

r, t, R^a, R^b and R^{10} are as described in claim 41;

to produce the N-arylalkyl benzoxazinone of the formula: